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## **Inventec installs the monitoring system for the Woerden-Bodegraven railway track.**

From 20 to 22 September 2011 a 1km long section of the Woerden-Bodegraven railway line was renovated using the so-called PSS (Planungs Schutz Schicht) method. This is a continuous process whereby a work train, while moving at a constant speed, lifts-up the rail and sleepers and removes and replaces the ballast and the underlying section of soil.

As this was the first time that this process was applied in The Netherlands and the subsoil at that particular location is relatively weak, Prorail (the rail asset manager) decided to install a permanent monitoring system over the full 1km distance.

Inventec was awarded the order to install the system which has to monitor the distributed settlement of the railway track for many years to come. The system consists of TenCate Geodetect<sup>®</sup>, a geotextile with integrated optical fibers that was installed under the track's foundation. By connecting this to a reading unit the distributed settlement can be measured with a spatial resolution of 1 meter over the full 1km track length (the equivalent of 1.000 sensors!)

One complication in this unique project was that the diameter of the roll of geotextile (and thereby its length) was limited as it had to fit in the confined space under the work train. This meant that Inventec had to have its crew stand-by for 24 hours per day to each time mount a new section under the train and to field-splice it to the foregoing section that was already in place.

After installation of the reading unit the complete system will be put in operation by Inventec.

In addition to distributed monitoring over the length of the track, there was a requirement for dynamic measurements where the track passes over a concrete culvert. This was achieved by installing a geotextile with integrated FBG (Fiber Bragg Grating) optic sensors.

